

REMARKS

A reconsideration if requested of Claims 1-14, wherein Claims 1, 9 and 14 have been amended.

As an initial matter, Claims 1-13 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. As a result, Claim 1 has been amended to conform to U.S. practice, and Claim 9 has been amended to change "liquid material" to --flowable material--. Accordingly, withdrawal of the rejections based on 35 U.S.C. § 112, second paragraph, is respectfully requested.

Claims 1-14 stand rejected under 35 U.S.C. § 103(a) as being obvious over DE 19506145 in view of U.S. Patent No. 5,350,002 to *Orton*.

The present invention relates to a tool for casting a shaped part for the production of a turbine blade, comprising a plurality of tool blocks, which when assembled with positive engagement in a predetermined manner, form a cavity with a shaped part, into which pourable material can be introduced by means of one or more access apertures. At least one of the tool blocks receives a rotatable or displaceable insert or inset which borders on the cavity with a surface and which can be fixed in different positions and/or orientations with respect to the at least one tool block, so that different cavity geometries defining an outside contour of the shaped part are formed in the different positions and/or orientations of the insert or of the inset. Independent Claims 1, 9 and 14 have been amended to more precisely define that the different cavity geometries define an outside

contour of the shaped part. This tool enables the easy change of the outer contour of the shaped part, i.e., of the turbine blade, for example, the change of a leading edge geometry or of the attack angle of the turbine blade, without a completely new production of the injection molding tool. This is accomplished by merely changing the position and/or orientation of the rotatable or displaceable insert or inset. None of the art of record disclose these patentable features.

DE 195 06 145 discloses a tool for casting a shaped part for the production of a special kind of turbine wheel comprising a plurality of tool blocks which, when assembled with positive engagement in a predetermined manner, from a cavity for the turbine wheel into which flowable material can be introduced by means of one or more access apertures. The several tool blocks include a first set of loose parts 2, 3, 4 defining the outer contours and a second set of shaped segments 5 defining the space between the several turbine blades of the turbine wheel. The second set of shaped segments 5 are connected to a transport mechanism 30 for controlling displacement and rotations of the arrangement of the shaped segments 5.

The transport mechanism enables the easy separation of the shaped segments after casting in a single step, which is described in column 3, lines 30 to 36 or lines 56 to 65 of this document. The easy separation of the shaped segments 5 is the object and the only purpose of the disclosed construction. When using this tool, the cavity for the shaped part is only formed in one position of the shaped segments 5 in which these segments are fixed by the fixation ring 3, the form ring 4 and the counterplate 2 (see figure 1 and column 5,

lines 53-66). In order to separate the shaped segments 5 with the transport mechanism 30, it is necessary to remove the counterplate 2, fixation ring 3 and form ring 4 from the shaped segments 5. After removable of these tool blocks, however, the shaped segments 5 alone do not form any cavity for the shaped part. Therefore, by displacement and rotation of these shaped segments 5, it is not possible to form different cavity geometries. With the tool of this document, therefore it is also not possible to change the outer contour of the shaped part without a completely new production of the tool.

This document, therefore, does not give any hint to a solution according to present independent claims. Furthermore, this document very specifically relates to the problems of producing the disclosed turbine wheel with several curved turbine blades, in particular the problems arising when removing the tool blocks.

U.S. Patent N. 5,350,003 to *Orton* does not make up for the foregoing deficiencies of DE 195 06 145. *Orton* discloses an assembly for making a wax pattern of hollow components, in particular of hollow turbine blades. To this end, a core is necessary which has to be positioned and oriented within the pattern die. The document discloses the use of a rotational or displaceable insert or inset which is allowed to rotate within a range of angles within the tool blocks. This insert or inset, however, defines the internal shape of the shaped part (see for example column 2, lines 23 to 27) and not, as in the present case, the outer contour of the shaped part. Therefore, with the disclosed tool of this document it is not possible to change the outer contour of the shaped part without a completely new production of the injection molding tool, i.e., the pattern die. Therefore, the solution

according to the present independent claims can not be obvious in view of this document or in view of DE 195 06 145. In addition, one having ordinary skill in the art would not combine these documents because they are directed to solutions of quite different problems, i.e., the construction of a tool for a special kind of turbine wheel and the arrangement of a tool for the production of hollow components.

For at least the foregoing reasons, it is submitted that the tool and process of independent Claims 1, 9 and 14, and the claims depending therefrom, is patentably distinguishable over the applied documents. Accordingly, withdrawal of the rejections of record and allowance of this application are earnestly solicited.

Should any questions arise in connection with this application, or should the Examiner believe a telephone conference would be helpful in resolving any remaining issues pertaining to this application, the undersigned respectfully requests that she be contacted at the number indicated below.

Respectfully submitted,

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